ATTACHMENT I

Aging Management Results for VC Summer Nuclear Station – Aging Management Summary Table

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Structure, Component, or Commodity Group	Function	Material	Environment	Aging Mechanisms and Effects	Aging Management Program	GALL Items	GALL Consistency	Notes
Non-EQ Insulated Cables and Connections	See Note 1	Various Organic Polymers (See Note 2)	Adverse localized environment caused by heat or radiation in the presence of oxygen	Thermal and Radiation Stress: Embrittlement, cracking, swelling, discoloration, melting of loss of dielectric strength leading to reduced insulation resistance and/or electrical failure, degradation of organics, radiation-induced oxidation, or moisture intrusion.	Yes (See Sect. 9)	A.1.1 A.1.2	Yes No	See Section 9 See Note 3 See Note 6
Non-EQ Insulated Medium-Voltage Cables	See Note 1	Various Organic Polymers (See Note 2)	Adverse localized environment caused by exposure to moisture and voltage	Water Treeing: Formation of water trees and localized damage leading to electrical failure (the breakdown of the insulation). Moisture intrusion.	No (See Sect. 9)	A.1.3	N/A	See Sections 6.2 and 9 See Note 4

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Electrical Connectors Subject to Boric Acid Corrosion	See Note 1	Various metals used for electrical contacts.	Exposure to borated water leakage.	Chemical Corrosion: Corrosion of connector/contact surfaces and intrusion of borated water.	Yes (See Sect. 9)	A.2.1	Yes	See Section 9 See Note 5

Note 1: The functions of the electrical component commodity groups are to provide electrical connections to specified sections of an electrical circuit to deliver voltage, current, or signals.

Note 2: The insulation materials for electrical cables and connections include the following – CSPE, EP, EPDM, EPR, Kerite, Melamine, Nylon, PE, Phenolics, Silicon Rubber, Tefzel, Vulkene, XLPE, XLPO

Note 3: Section 9 of this report details the bounds of the electrical aging management program for VCSNS. The program will cover non-EQ insulated cables in the most limiting thermal and radiation environmental zones of the Intermediate and Auxiliary Buildings (and other plant areas at the discretion of the responsible Electrical Engineering group). It will provide for a visual inspection of the accessible non-EQ insulated cables in these zones, in order to determine if the cable jackets show any evidence of cracking, embrittlement, melting, discoloration, or other visible physical changes which might indicate insulation degradation.

Note 4: GALL item A.1.3 is not applicable to VCSNS because the medium voltage circuit duct banks and conduits have design features to preclude moisture collection at the cable jackets and insulation. In addition, a review of VCSNS plant operating experience shows that no cases of failure of medium voltage cable due to moisture problems were found. In-scope 7.2Kv DG circuits are normally de-energized and do not provide long-term electrical fields necessary for the water treeing phenomenon.

Note 5: Section 9 of this report details how the issue of boric acid corrosion of electrical connectors is addressed. The Civil/Structural and Mechanical AMR reports provide descriptions of the VCSNS Boric Acid Corrosion Surveillance program.

Note 6: NUREG-1801 recommends an aging management program specifically for instrumentation cables with sensitive low-level signals. VCSNS applies the non-EQ Insulated Cables and Connection Inspection Program to these cables. The visual inspection of instrument as well as power and control cables is considered a better means to identify age related degradation due to localized ambient thermally and radiologically induced stress prior to significant loss of insulation resistance.